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| EXAMINER BARKER, MATTHEWM | | | | |
| ART UNIT 3662 | | PAPER NUMBER | | |
| NOTIFICATION DATE 09/02/2009 | | DELIVERY MODE ELECTRONIC | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/541,906

Applicant(s)

FINCH ET AL.

Examiner

MATTHEW M. BARKER

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-28 and 37-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-28 is/are rejected.
- 7) ☒ Claim(s) 37-42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/8/2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 17-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molyneux-Berry (EP 0851238 A2) in view of Rees et al. (US 2004/0046689).

Regarding claim 17, Molyneux-Berry discloses a method of extracting a radial velocity characteristic of a target from one or more coherent radiation pulse bursts comprising the steps of :

- receiving radiation echo returns of the pulse bursts from a remote scene (page 5, line 37);
- processing the received echo returns into in-phase (I) and quadrature (Q) components

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(page 5, lines 39-40);

-measuring the I and Q components at intervals to provide sampled data (page 5, lines 46-49);

-modelling the sampled data by applying a predetermined function and modifying the predetermined function to optimize the fit to the sampled data as a function of velocity (page 4, lines 7-15);

-determining the target radial velocity in dependence upon said modified predetermined function (page 11, lines 21-24); and

-outputting the determined target radial velocity (page 12, lines 11-12).

Molyneux-Berry discloses modifying the function based on phase but does not discuss modifying the predetermined function based on both phase and amplitude. Rees discloses a related signal processing method including modifying the function based on both phase and amplitude (paragraphs 0088-0091). It would have been obvious to one of ordinary skill in the art to adapt the method of Molyneux-Berry to modify the predetermined function based on both phase and amplitude in order to further enhance the signal to noise ratio (Rees Abstract).

Regarding claim 18, Molyneux-Berry discloses the claimed optimized curve fitting (page 4, lines 20-25).

Regarding claim 19, Molyneux-Berry discloses the claimed clutter return model (page 4, lines 44-51).

Regarding claim 20, Molyneux-Berry does not specify that the clutter model is a low order polynomial function. However, Rees specifies that the best fit (produced in

the modification step of claim 17) is a low order polynomial function in I and Q (paragraph 0091).

Regarding claim 21, Molyneux-Berry discloses extracting target amplitude from the sampled data in dependence upon the modified predetermined function (page 9, lines 8-13).

Regarding claim 22, Molyneux-Berry discloses extracting range ambiguity from the sampled data in dependence upon the modified predetermined function (page 2, lines 45-48).

Regarding claim 23, Molyneux-Berry discloses extracting azimuth from the sampled data in dependence upon the modified predetermined function (page 9, lines 30-31).

Regarding claims 24-26, Molyneux-Berry discloses that the pulse bursts are transmitted at non-constant PRI bursts at a frequency which is changed between successive pulses, and such echo returns are measured at non-equidistant intervals (page 4, lines 26-27).

Regarding claim 27, Molyneux-Berry discloses that the pulse bursts are internally coherent (page 2, lines 25-27) and mutually incoherent (page 4, lines 26-27: varied PRI on a burst of pulses basis).

Regarding claim 28, Molyneux-Berry discloses carrying out conventional MTI filtering before step (d) (page 4, lines 38-39).

Response to Arguments

4. Applicant's arguments filed 6/8/2009 have been fully considered but they are not persuasive. On pages 10-11 of the Remarks, Applicant argues that Molyneux-Berry is not attempting to model the sampled data itself, but instead finding a velocity that would produce the sampled data. The argument is not convincing because Molyneux-Berry does model the data in the sense that a range of velocity values are best-fit to each sample of phase data, producing a model of the data as a function of velocity. It is recommended that the limitation of new claim 37 be incorporated into independent claim 17 to clarify the type of modeling performed by the present invention.

On page 12 of the Remarks, Applicant argues that Rees does not attempt to model data representing target returns; that instead modeling is only performed on slow-changing noise due to clutter or phase drift so that a threshold can be applied to identify target returns that don't fit the model. The argument is not convincing because while true that Rees models the error as noted, Rees also models the sampled target returns. See Figure 5 and paragraphs 0090-0091:

"[0090]The signal processing means 22 sequentially takes a return 52 for every range cell 42 from each pulse 24 in the train of pulses 25 and produces a polynomial best fit estimate 54 (X_{EST}) for both the real 46 and the imaginary 48 part, typically the real part, see for example FIG. 5.

[0091] The returns are normalised with respect to the polynomial best fit estimate, value 54 for each individual range cell 42 in every return."

It is further noted that claim 17 does not require the model to be of target returns; indeed, dependent claim 19 indicates that the model is not of target returns, but of clutter instead.

Allowable Subject Matter

5. Claims 37-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW M. BARKER whose telephone number is (571)272-3103. The examiner can normally be reached on M-F, 8:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/M. M. B./

Examiner, Art Unit 3662

/Thomas H. Tarcza/

Supervisory Patent Examiner, Art Unit 3662